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Energy Sense: Humidity

Cooperative Extension South Dakota State University

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ENERGY SENSE:

humidity



Cooperative Extension Service
South Dakota State University
U.S. Department of Agriculture



ENERGY
SENSE

humidity

The amount of water vapor in the air—humidity—affects comfort and determines the need for heat. A humidity level of 30 to 50 percent is comfortable for most people.

In summer, the combination of high temperature and high humidity is uncomfortable. In winter, outside air is cold and holds relatively less moisture. As this air passes through a home heating system, the relative humidity becomes very low. This lower humidity air increases the rate of evaporation of moisture from the skin and produces a cold sensation, even at fairly warm air temperatures. A higher humidity level helps satisfy comfort and health. This is achieved by adding water vapor to heated air.

The addition of water vapor reduces drying. Some people experience fewer colds, respiratory, or sinus problems with humidification. With humidified air it may also be possible to be slightly more comfortable at a

few degrees lower temperature. Higher humidity also protects home furnishings, especially wood, that might warp, crack, or become unglued in a dry environment.

The level of humidity in your home can be measured with a hygrometer, an instrument available at most hardware stores.

Humidification Systems

A humidifier is a device that adds water vapor to heated air. Water vapor can be added automatically to the hot air flowing from a heating unit if a humidifier is added to a hot air furnace. Powered units add up to two gallons of water per day to the air. Installation of a built-in humidifier requires skills in electrical wiring, plumbing, and sheet metal forming. It is usually a job that requires a professional.

Free-standing humidifiers are readily available and are easy to install. Water is usually added manually each day; some

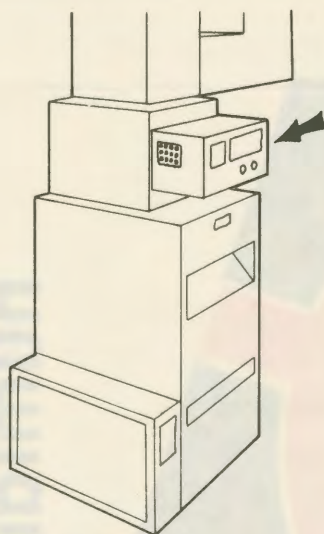
units can be plumbed for automatic operation. In automatic operation, a device called a humidistat senses and controls the humidity at the desired level. Follow manufacturer's instructions for proper operation and maintenance.

Energy is required to add moisture to the air; thus the use of a humidification system cannot generally be regarded as an energy-saving measure.

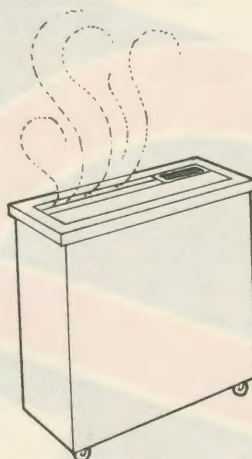
Humidity Levels

Uninsulated, poorly weather stripped or caulked houses have a high rate of air exchange and require reasonably high levels of humidification in order to maintain 30 to 50 percent humidity. On the other hand, homes with good vapor barriers retain humidity. If too much water vapor is present in the air, part condenses on cold surfaces such as windows. The excess passes through ceilings and sidewalls where it may be trapped and condense. This

Three ways to humidify the air:



Built-in unit



Free-standing unit



Pan of water
near heat source

can cause mildew, rot, peeling paint, or a breakdown of insulation material. To prevent moisture damage, cover interior walls with vapor resistant paint or wallcovering and seal all interior cracks.

Additional Tips

- Humidity may be increased by placing containers of water on or near heating outlets. Heat will evaporate additional moisture into the air.

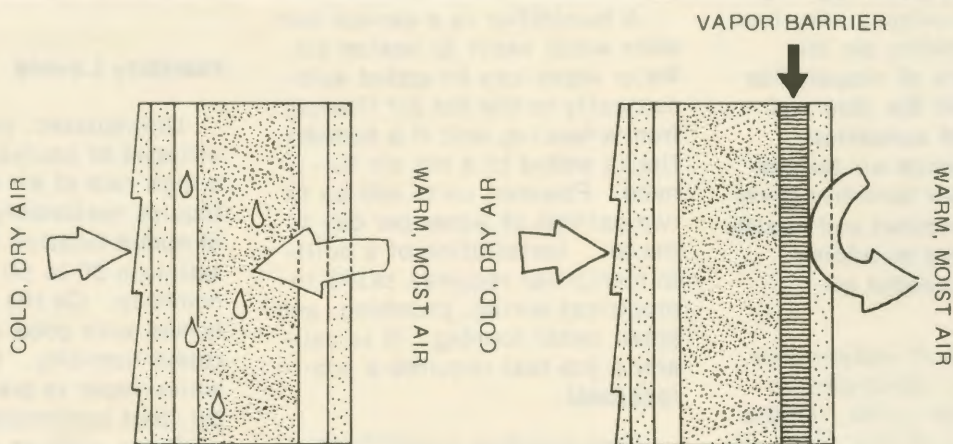
- Water vapor from cooking and bathing adds moisture, so use exhaust fans sparingly during the heating season. This will help increase humidity in the home.

- If an electric clothes dryer is being used, it can be vented into the home during winter months to add heat and humidity. Install an extra lint trap; vent outside during summer months; discontinue if condensation runs off windows or if a dust problem occurs.

- Plants not only beautify the home, they add water vapor to the air through transpiration and evaporation.

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A vapor barrier protects walls from condensation.

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